understood, these sheets themselves have no physical indication of such equipotential lines and reference is made thereto only in the interest of understanding the invention. Finally, resting upon the sheet **10** and with its respective edge scales (indicated by **1** to **9**) suitably positioned with respect to the equipotential lines of sheets **10** and **14** is a chart **24** having data such as indicated by the curve **25** which is to provide the information to be sensed and employed by an information-indicating unit.

The sheets **10** and **14** may comprise, for example, conducting paper Type L resistance 1,500–2,000 ohms per square, Catalogue No. P–24 available from Sunshine Scientific Instrument Co., Philadelphia, Pa., and the strip electrodes may comprise conducting paint applied to the opposite edges of the sheet with the respective conductors **18**, **19** and with the respective leads to the battery terminals being bonded in such paint. Alternately, copper or other conducting bars connected to such conductors and leads may be physically clamped to the sheets, if so desired.

With the assembly prepared as above described and with the electrodes energized by the batteries and with the conductors **18**, **19** attached to the information-indicating unit, the user then moves the grounded conducting probe **21** to point P and pushes the same into the sheets **10** and **14** whereupon the signals S*x* and S*y* are then available as direct current potentials measured from the common ground. Probe **21** preferably is a metallic needle which forms a small hole (about 3 mils in diameter) in the sheets and with a commensurate small amount of damage to the punctured sheets, and with the result that a given conductive sheet may be used with as many as 50 or more charts **24** before being replaced.

As will be appreciated, in certain modifications the probe itself need not be grounded nor indeed cause puncturing of the sheets. As indicated in FIG. **4**, for example, the assembly of sheets may include a grounded metallic sheet **30** such as aluminum foil, disposed beneath the lower sheet **22** of insulating material and connected by conductor **31** to the information-indicating unit **32**. In this arrangement the probe **33** may merely comprise a conductive puncturing member mounted on a handle and which when it touches the grounded sheet **30** will thereupon cause the signals S*x* and S*y* to be applied to the unit **32** due to the simultaneous grounding of sheets **10** and **14** at the point P (*x*,*y*).

As shown in FIG. **5**, the principle of the invention may be employed with a structure different from that shown in FIG. **1** and in which one of the sheets, for example sheet **10**, is supported on the underside of an insulator block **40** and the other conductive sheet **14** is supported on the upper facing side of another insulator block **41**. These blocks are spaced from each other at a sufficient distance to accommodate movement of a follower member **42** which is suitably grounded as by conductor **43**. Attached to the member **42** is a pair of grounded contacts **44**, **45** adapted to engage the respective sheets **10** and **14** without puncturing the same. Also attached to member **42** is a bracket **46** serving as a handle and having an indicator element **47** adapted to be positioned at the point P (*x*,*y*) over the chart **24** which contains the information to be transposed and which is mounted upon the outer surface of the block **40**. As will be noted, as the indicator element **47** is moved to a spot on chart **24** corresponding to point P (*x*,*y*) the contacts **44**, **45** follow this movement and since they are grounded the requisite signals S*x* and S*y* are applied to the unit **32** as above described with respect to the embodiments of FIGS. **3** and **4**.

Passing now to FIG. **6**, the invention is especially well suited for replotting purposes and often the use of independent *x* and *y* gains in the signals S*x* and S*y* are desired. Moreover, when the information-indicating unit is represented by equipment requiring a "seek" and an "enable" signal, such as the well known Moseley recorder, the present invention may be employed by simply adding conventional potentiometers and two additional normally ungrounded sheets of electrical conductors such as aluminum foil insulated from each other. In this modification the lowermost sheet **50** of metal is separated from an upper sheet **51** of metal by the insulating sheet **52**. The stack consisting of *x* coordinate sheet **10**, insulating sheet **23**, *y* coordinate sheet **14**, and insulating sheet **22** as above described with respect to FIG. **3** is disposed above the upper metal sheet **51**. A first potentiometer having a pair of resistances **53**, **54** is connected in parallel with battery **13** across the electrodes **11**, **12** of the *x* coordinate sheet **10** and similarly a second potentiometer having a pair of resistances **55**, **56** is connected in parallel with battery **15** across the electrodes **17**, **18** of the *y* coordinate sheet **14**. As an example, the batteries may provide a potential difference of 12.0 volts across their terminals when their switches **57** and **58** are closed and each of the potentiometer resistances may be about 1,500 ohms.

Connected to the information-indicating unit **62**, which may be the conventional Moseley X–Y plotter, are conductors **59** and **60** respectively extending from sheets **51** and **50** and applying the "seek" and the "enable" signals to the plotter. Accordingly, when the grounded probe **21** is positioned above the desired point on a strip chart (not shown) disposed above sheet **10** and corresponding to point P (*x*,*y*) and is then moved downwardly into contact with sheet **50** the following events occur.

As the probe passes through the strip chart (not shown) into sheet **10** a signal corresponding to the X coordinate of point P is applied through conductor **18** to the plotter. Then as the probe passes through sheet **14** a signal corresponding to the *y* coordinate of the point P is applied through conductor **19** to another terminal of the plotter. Internal *x* and *y* gains internal to that plotter permit independent rescaling of *x* and *y* coordinates.

By means of the simple circuits shown in FIG. **6** and by suitable adjustment of the sliding contacts of the potentiometers the operator may establish an arbitrary "zero" on the strip chart to appear at a desired "zero" location on the replotted function. Furthermore, the required "seek" and "enable" commands are applied through the conductors **59** and **60** respectively to the plotter. Thus, the apparatus can easily provide for rescaling of either the *x* or the *y* values; can make arbitrary selection of origin of such values; and lends itself to making automatic plot commands to the plotter unit.

As will be understood, the invention is not limited to use with data replotters and the term "information-indicating unit" as used herein is intended to comprehend other forms of conventional apparatus. For example, simple digital voltmeters may be employed for detecting the S*x* and S*y* signals from the assembly of sheets; or such signals may be transmitted to and stored on tape; or such signals may be transferred directly into computers. In addition, the term "probe" as used herein is not limited to a member consciously moved by the operator, but may in fact be a random signal—initiating means as for example a projectile piercing the sheets; a random moving particle or object touching the sheets to generate signals; or other grounded or non-grounded object capable of causing the two S*x* and S*y* signals to be generated.

Having thus described preferred forms of coordinated apparatus by means of which the invention is practiced, it will be understood that the invention may be embodied in other forms without departing from the scope of the invention as defined by the appended claims.

What is claimed is:

1. An electrical sensor of plane coordinates comprising first and second sheets of conductive material spaced from each other and having a uniform resistivity throughout, insulating means separating said sheets, each of said sheets having attached thereto a pair of electrodes equally spaced from each other across the sheet, said sheets being juxtaposed to provide an indeterminate number of sets of plane coordinates in the form of equipotential lines normal to each other across the respective sheets of conductive material first and second electrical circuits including the respective conductive sheets floating with respect to each other and with respect to ground, a pair of conductors extending respectively from one of the